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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/601,959	06/23/2003	Chang-Hyeon Lee	050324-1321	8906
24504	7590	02/28/2005	EXAMINER	
THOMAS, KAYDEN, HORSTEMEYER & RISLEY, LLP 100 GALLERIA PARKWAY, NW STE 1750 ATLANTA, GA 30339-5948			CUNNINGHAM, TERRY D	
			ART UNIT	PAPER NUMBER
			2816	

DATE MAILED: 02/28/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

CT

<b>Office Action Summary</b>	Application No. 10/601,959	Applicant(s) LEE ET AL.	
	Examiner Terry D. Cunningham	Art Unit 2816	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 20 December 2004.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-11, 13-17, 20-25 and 28 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-11, 13-17 and 20-25 is/are allowed.
- 6) ☒ Claim(s) 28 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 02 August 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Summary of changes in this action***

- I. The rejection to claims 1-11,13-17 and 20-25 have been overcome responsive to the amendment.

### ***Claim Rejections - 35 USC § 112***

Claim 28 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 28, there is no support found for the newly recited language in lines 11-12. Lines 1-2 expressly recite that the method is for “pumping a charge in a semiconductor based charge pump”. Since the specification expressly discloses that the “charge pump” is element 202 of Fig. 2, all of the steps recited in the method should pertain thereto. Since the language recited in lines 11-12 pertains to the operation of loop filter 204, which is separate from the “charge pump”, it is misdescriptive to recite this step as being part of the method of “pumping a charge in a semiconductor based charge pump”.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 28 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kawasaki (USPN 5,955,904) in view of Kobayashi et al. (USPN 5,936,455, newly cited). Kawasaki discloses, in

Art Unit: 2816

Figs. 3, 4 and 5 a circuit that will provide a method including the steps of “receiving first (CLK) and second (CKE) input signals at first (50) and second (63) switching transistors”; and “providing a substantially constant reference voltage ( $V_{ref}$ ) to first (51) and second (64) complementary transistors”. The reference to Kawasaki does not expressly disclose that  $V_{ref}$  is noise filtered. However, it is notoriously well known, such as taught in Figs. 5-6 of Kobayashi et al. to capacitor filter a reference voltage provide to a comparator. Such a configuration is known provides smoothing of the reference voltage. Therefore, it would have been obvious for one skilled in the art to provide capacitor filtering to  $V_{ref}$  in the circuit to Kawasaki, such as taught by Kobayashi et al. for the expected advantage of smoothing.

Examiner has fully considered Applicant's remarks for the above rejection and has not found them to be persuasive. Firstly, the circuits of Figs. 4 and 5 of Kawasaki are expressly disclosed as being part of Fig. 3. Thus, they are not separate circuits. Additionally, Examiner is reading the entirety of Fig. 3 as being a “charge pump”. As seen, with the above modification including filter of  $V_{ref}$ , it would have been clear to one skilled in the art he  $V_{ref}$  is further capable of being used as a “second output”.

Claim 28 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lee (USPN 5,889,437) in view of Abdi et al. (USPN 5,722,052). The reference to Lee discloses a circuit that will provide a method including the steps of “receiving first (UP) and second (DN) input signals at first (M41) and second (M43) switching transistors”; “providing a substantially constant reference voltage ( $\overline{UP}$  and  $\overline{DN}$  as modified below) to first (M42) and second (M44) complementary transistors” and “filtering noise (see lines 3-10 of Col. 5 of Abdi et al., as modified below)”. Clearly,  $V_{ref}$  is capable of being provided as a “second output”. The reference to Lee discloses using complementary signals (UP,  $\overline{UP}$ , DN,  $\overline{DN}$ ) rather than using a

single-ended signal and constant reference voltage. However, it is notoriously well known, as is disclosed by Abdi et al., complementary signals and a single-ended signal with a constant reference voltage (e.g.,  $V_{REF}$ ) for use with a comparator are art-recognized equivalents and can be used in a charge pump circuit. The configuration of a single-ended signal and constant reference voltage is well known as having the advantage of being usable with a phase detector that generates a single-ended signal. Therefore, it would have been obvious for one skilled in the art to use a single-ended signal and constant reference voltage in place of the complementary signal for the expected advantage of being usable with a single-ended phase detector.

Examiner has fully considered Applicant's remarks for the above rejection and has not found them to be persuasive. Lines 3-10 of Col. 5 of Abdi et al. expressly recite that " $V_{REF}$  is preferably a DC voltage level compensated against variations in temperature and supply voltage". Examiner contends that one skilled in the art would deem this operation as reasonably encompass "filtering noise".

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.


***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Terry Cunningham whose telephone number is 571-272-1742. The examiner can normally be reached on Monday-Thursday from 7:30 to 6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy P. Callahan can be reached on 571-272-1740. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

TC  
February 23, 2005

  
Terry D. Cunningham  
Primary Examiner  
Art Unit 2816